

VCU 02-14
Amendment dated 09/17/2007

10/565,852

02940323aa
Reply to office action mailed 06/15/2007

REMARKS

Claims 1-14 are currently pending in the application. By this amendment, claims 1, 3 and 8 are amended for the Examiner's consideration. The foregoing separate sheets marked as "Listing of Claims" show all the claims in the application, with an indication of the current status of each .

In the specification, the paragraphs beginning at page 2, line 8, and at page 4, lines 17 and 26 have been amended to correct errors in grammar and syntax.

The Examiner rejects claim 3 under 35 U.S.C. §101, but suggests this can be remedied by a straightforward addition (use "adapted to be applied" rather than "applied" in reference to the acoustic eye patch). The above amendment adopts this suggestion.

Claims 1, 3, 5, 6, 8, 12 and 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2003/0191411 to Yost et al. ("Yost") in view of U.S. Patent No. 5,129,403 to Henriquez et al. ("Henriquez"). Yost discloses a methodology for determining absolute intracranial pressure (ICP) using reference measurements of skull expansion. The first reference measurement is of the patient's blood pressure P_{vb} (venous bed pressure) when skull expansion is approximately zero (abstract; ¶0021). It is known in the art that ICP is equal to P_{vb} at zero skull expansion (¶0031). Zero skull expansion is indicated when there is a zero phase difference between an acoustic transmitter (e.g. transducer 30, mounted to pressure pad 26) and an acoustic receiver (e.g. transducer 31, mounted to pressure pad 28) of an acoustic signal applied to the skull by the acoustic transmitter (¶0029). Skull expansion is monitored by using the acoustic signal to measure the physical distance between any two measurement points (e.g. transducers 30 and 31)(¶0033-0036). With this monitor in place, a second reference measurement is made by inducing a known change in ICP, using various known techniques (¶0030). By using the skull expansion monitor to measure the change in skull expansion corresponding

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to this known change in ICP, the system is calibrated, and thereby able to use skull expansion measurements to determine absolute ICP (¶¶0035-0036).

As is clear from the foregoing summary of the Yost invention, Yost is not related to the present invention. Yost correlates ICP with skull expansion, whereas the present invention correlates changes in ICP with changes in the resonant acoustic frequencies of the brain. Furthermore, the use of acoustic signals in Yost is quite different. Yost uses the acoustic signal to measure physical distance between measurement points, and thereby skull expansion. In the present invention, by contrast, the acoustic signal is measured at the eye (or eyelid) and the output of this measurement is analyzed to determine ICP changes. In the present invention the acoustic signal is used as measure of ICP, whereas in Yost the acoustic signal is simply used to measure skull expansion. It should be emphasized that the citation used by the Examiner (¶0022) refers to acoustic signals only as one means for the measurement of skull expansion as summarized above (i.e. “means such as the mechanical-acoustic system that will be described herein”). There is no suggestion in ¶0022, or anywhere else in Yost, to measure acoustic signals in the brain itself. Yost simply measures a “mechanical” property (i.e. distance) using the length traveled by an acoustic signal (thus “mechanical-acoustic”).

The claims have been amended to clarify that the acoustic signals measured and analyzed by the invention are in the brain.

The analyzer of the Henriquez reference is for detecting intersaccular aneurysms, which create “characteristic acoustic signals” (col. 1, line 14) in response to the pumping of the blood. This has nothing to do with acoustic signals which are applied to the brain so that the response to this applied signal within the brain can be measured and analyzed. Henriquez does confirm that the eye provides a “window” to the brain, unobstructed by bone, as also indicated in the background section of the present invention (page 2, lines 8-9). However, there is no reason why one skilled in the art would find this helpful in combination with the teachings of Yost. Nor is there

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a reason why one skilled in the art would find Yost's skull expansion mechanical-acoustic measures helpful in combination with the teachings of Henriquez. Thus the combination of Yost and Henriquez fail to disclose the elements of the invention as claimed, and this combination of references is therefore overcome.

Claims 2, 4, 9 and 11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Yost in view of Henriquez and further in view of U.S. Patent No. 5,919,144 to Bridger et al. ("Bridger"). The Yost/Henriquez combination is not an adequate reference, as explained above, and therefore this ground of rejection is overcome. The Bridger reference discloses use of frequencies in the range of 100kHz (col. 2, line 20), but does not overcome the deficiencies of Yost and Henriquez regarding the other elements of the rejected claims. It is noted that Bridger discusses the use of a resonant frequency (col. 2, line 48), but takes the measurement on the forehead (col. 3, line 35), with consequent interference of the skull bone with the signal (as described in Henriquez), which Bridger seeks to overcome with signal processing (col. 3, lines 36-50).

Claims 7 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Yost in view of Henriquez and further in view of U.S. Patent No. 6,423,001 to Abreu. The Yost/Henriquez combination is not an adequate reference, as explained above, and therefore this ground of rejection is also overcome.

In view of the foregoing, it is requested that the application be reconsidered, that claims 1-14 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at 703-787-9400 (fax: 703-787-7557; email: clyde@wcc-ip.com) to discuss any other changes deemed necessary in a telephonic or personal interview.

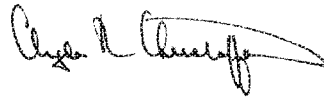
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If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Sincerely,

A handwritten signature in dark ink, appearing to read "Clyde R. Christofferson", with a long, sweeping horizontal stroke extending to the right.

Clyde R Christofferson
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